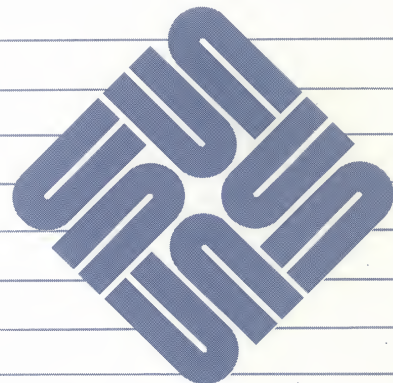


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Sun 16-Slot Logic Enclosure

Installation Manual





Sun 16-Slot Logic Enclosure

Installation Manual

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Preface

The purpose of this manual is to provide you with instructions for installing a 16-slot logic enclosure.

Summary of Contents

The contents of this manual are organized in this way:

Chapter 1

This chapter provides an overview of cabinet features, important site preparation requirements, and directions for unpacking and inspecting the logic enclosure.

Chapter 2

This chapter provides basic logic enclosure installation procedures, as well as provides instructions for installing SCSI peripherals and printed circuit boards.

Appendix A

This appendix illustrates how the 16 slots in the cardcage are numbered.

You will find a *Reader Comment Sheet* at the back of this document. Please fill it out and return the sheet to us; it will help us to maintain the accuracy and usefulness of this document. Your comments are greatly appreciated.

Introduction

The Sun 16-slot logic enclosure is a card cage assembly that can be installed in the Sun 56-Inch Data Center Cabinet. This chapter provides the following information for the logic enclosure:

- Important site preparation requirements
- Directions on inspecting, shipping, or storing it

1.1. Important Site Preparation Requirements

Sun Microsystems recommends installing the Sun 16-slot logic enclosure in a computer room environment. Computer room installation provides security access to computers and stored information, and allows control of environmental factors such as temperature, humidity, airborne dust, and so forth. Computer room installation also protects the equipment from fires, floods, and any other dangers originating in the building.

NOTE *For a complete description of all aspects of site preparation, including site selection (floorspace, location, safety, security), and environmental (air conditioning, heating, filtering, vibration) requirements, contact your local sales office to order the Sun Site Preparation Guide for X90 Systems, P/N 800-3270.*

Unpacking and Inspecting the Logic Enclosure

Select an area with ample room for the unpacking crew to move about while unpacking the logic enclosure. Place protective pads or cushioning down to prevent scratching or damage to cosmetic surfaces.

NOTE *At least two people are needed to lift the logic enclosure.*

1. Immediately inspect all shipping containers for evidence of physical damage. If a shipping carton is damaged, request that the carrier's agent be present when the carton is opened. Keep all of the contents and packing material for the agent's inspection.
2. Verify that the components you received match the shipping list.

Shipping or Storing the Logic Enclosure

When preparing the logic enclosure for shipment or storage, be sure to use the original shipping containers and packing materials provided when you received it. Follow (in reverse) the graphic unpacking instructions which are attached to or printed on the panels of each of the shipping containers.

Logic Enclosure Installation

This chapter provides the following information:

- A description of tools required.
- An overview of power safety precautions.
- An overview of the 16-slot logic enclosure features.

2.1. Tools Required

The following tools are required for installation of the 16-slot logic enclosure in a Sun Data Center Cabinet.

- M4 (7mm) Hex Socket
- Flat-blade Screwdriver
- 3/16-inch Hex Nut Driver (5mm)
- No. 2 Phillips Screwdriver

2.2. Safety Precautions

For your protection, observe the following safety precautions when installing your logic enclosure:

- Do not connect any cables until instructed to do so.
- Only use properly grounded power outlets as described in the *Sun Site Preparation Guide for X90 Systems*, P/N 800-3270, available through your local sales office.
- Refer servicing of the logic enclosure and its subassemblies to qualified personnel.

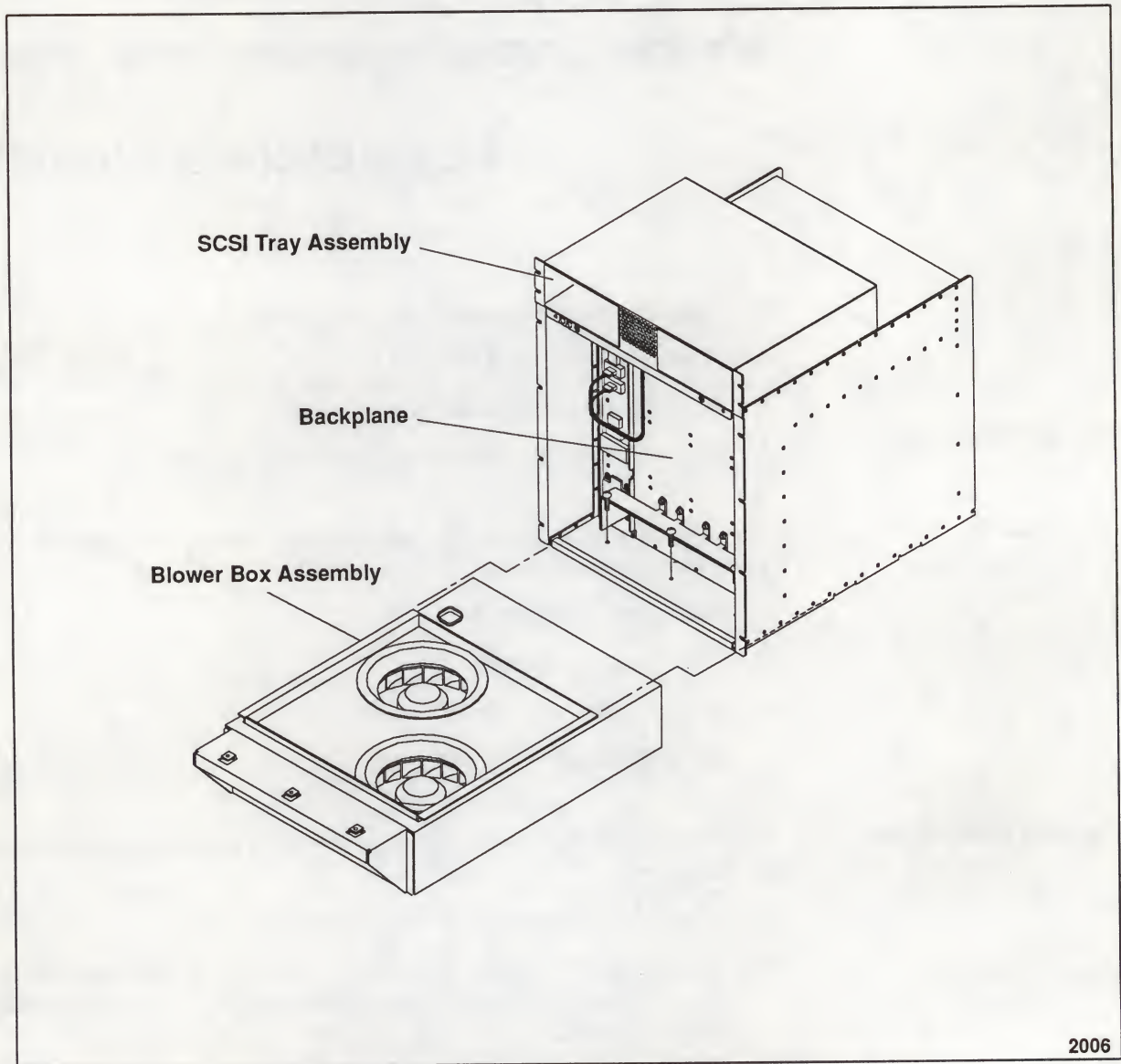
2.3. Logic Enclosure Assembly Features

The logic enclosure consists of the following assemblies:

- SCSI Tray Assembly
- RFI Shield
- Logic Enclosure Subassembly
- Blower Box Assembly

Refer to figure 2-1.

Figure 2-1 *Logic Enclosure Key Assemblies*



2.4. Installation Overview

The logic enclosure installation procedure consists of:

- inserting the logic enclosure into the cabinet
- installing any additional accessories such as SCSI disc drives or printed circuit boards

2.5. Installation Procedures

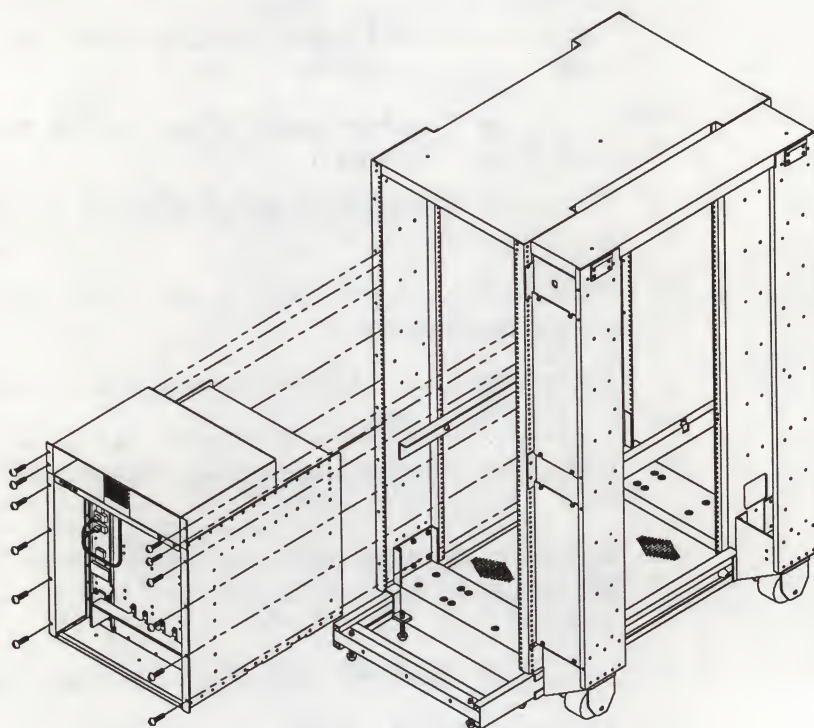
To install the logic enclosure in a Sun cabinet,

1. Remove any panels that block access to the rear of the cabinet.
2. Install the mounting rails to the chassis frame using 10-32 screws.
3. Insert the logic enclosure into the cabinet. Fasten the eight Phillips-head screws on the front of the enclosure and the two M-4 screws at the rear of the enclosure.
4. Secure the DC power distribution harness to the logic enclosure and connect all cables to the backplane.

CAUTION Make sure that the cables are tucked inside of the blower box to prevent them from being sheared off.

5. Connect the SCSI interface cable from the SCSI tray to the connector on the host adapter.
6. Insert the blower box assembly as described in the section, "Installing the Blower Box Assembly."
7. Connect the power cable from the blower box assembly to the power supply.
7. If you have any additional SCSI disc drives to install, do so now. Follow the instructions in the installation documentation that comes with your SCSI device.
8. If you have any additional printed circuit boards to install, do so now. Follow the instructions as described in the section, "Installing Printed Circuit Boards."
9. Install the RFI shield as described in the section, "Installing the RFI Shield."
10. Replace any panels that you removed in step 1.

Figure 2-2 *Installing the Logic Enclosure*



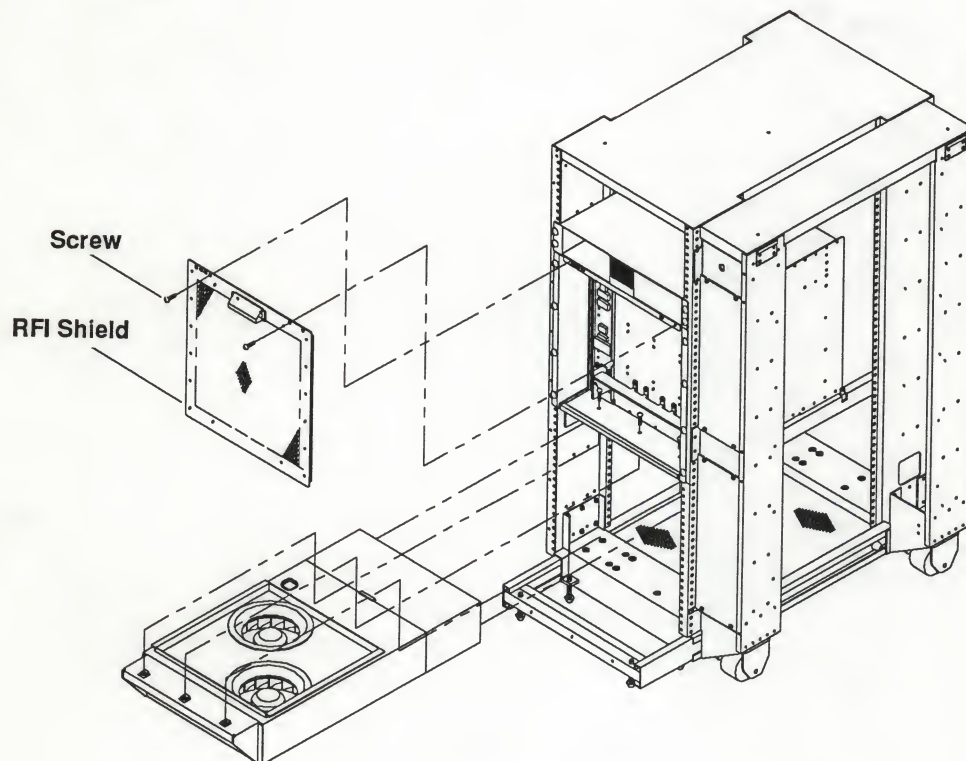
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Installing the RFI Shield

The radio frequency interference (RFI) shield is attached with two SEM screws along its top edge. Use a Phillips screwdriver to secure the screws and attach the RFI shield to the logic enclosure. Figure 2-3 illustrates this procedure.

WARNING *Do not turn power on with the RFI shield removed.*

Figure 2-3 *Installing the RFI Shield*



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Before adding a SCSI tape device to the logic enclosure, refer to the appropriate device documentation to make sure the drive is approved by Sun Microsystems for your system.

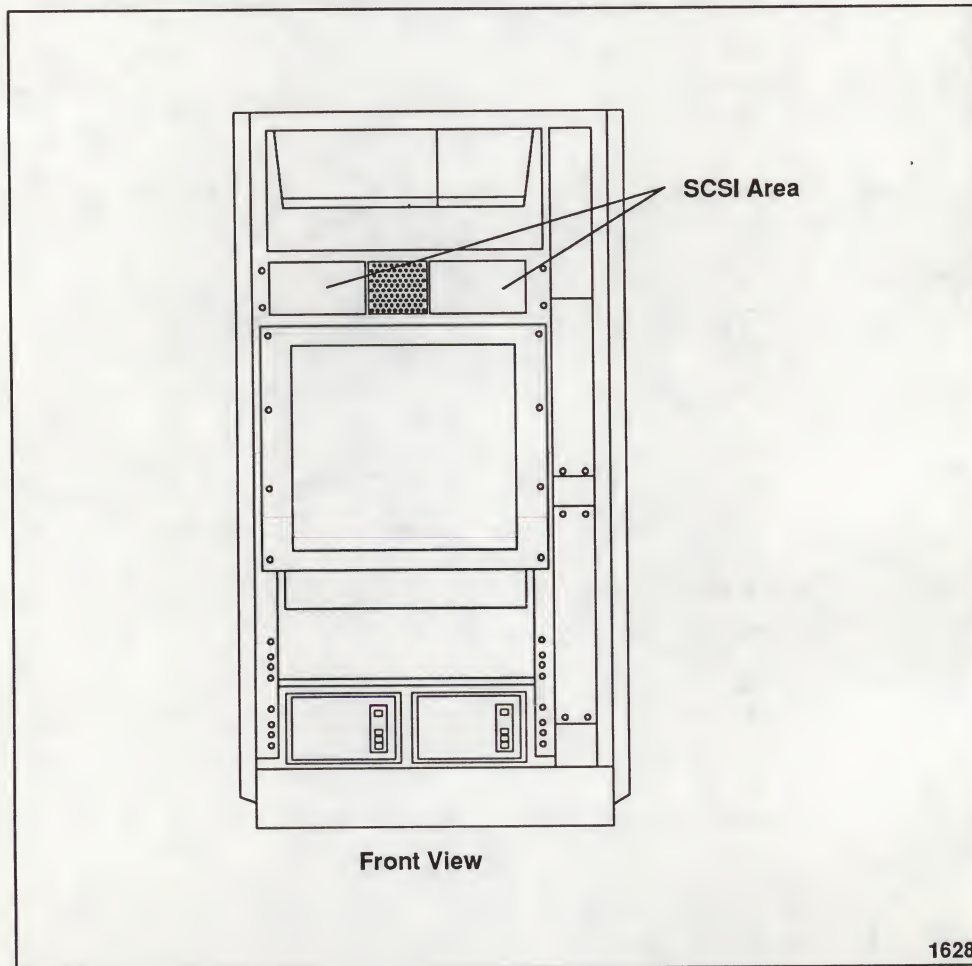
Figure 2-4 illustrates how to access the SCSI area.

For mechanical details of attaching a SCSI device to the SCSI tray, refer to the installation/configuration manuals for the SCSI device.

WARNING

To maintain full RFI compliance, follow the directions indicated in the SCSI device installation manual for reinstalling the cover plate to the SCSI tray.

Figure 2-4 *Accessing the SCSI Tray Area*



Connecting SCSI Tray Cables

NOTE *There are two different types of SCSI Trays available. One type of SCSI Tray has a holder for a terminating connector at the center of the rear of the tray; the other type of SCSI Tray does not. Make sure that you refer to the appropriate section for the type of SCSI Tray that you need to connect.*

NOTE *Ensure that you are using the correct SCSI cable part numbers: P/N 530-1593 for SPARCserver 390; 530-1249 for SPARCserver 490).*

Check the rear of the SCSI tray to see if it has a holder for a terminating connector at the center. This holder consists of two standoffs labeled "Terminator Storage." (If the terminator connector is in its holder, the label is covered.)

NOTE *If the SCSI Tray does not have this holder, follow the alternative instructions covered in the section, "Connecting Cables to SCSI Trays with No Terminating Connector Holder."*

Connecting Cables to SCSI Trays with No Terminating Connector Holder

Connect the first SCSI interface cable from the logic enclosure to the SCSI "IN" connector at the back of the SCSI tray.

Unless the system now contains three tape drives, at the SCSI "OUT" connector, reconnect the cable to the front-load 1/2-inch tape drive that was attached there before. If there are not three tape drives, connect the SCSI cable from the front-load 1/2-inch tape drive to the second SCSI connector in the logic enclosure.

NOTE *If there are now four tape drives total in the system and its expansion cabinet, two front-load 1/2-inch tape drives must be in the Data Center Expansion Cabinet, both daisy chained to the second SCSI adapter.*

Connecting Tray Cables to SCSI Trays with Terminating Connector Holder

Connect the CPU's SCSI interface cable from the logic enclosure to the SCSI "IN" connector at the back of the SCSI tray.

At the SCSI "OUT" connector, reconnect the cables to the front-load 1/2-inch tape drive that was attached there *unless* your system now contains three tape drives. If there are three tape drives in the cabinet, connect the SCSI cable from the front-load 1/2-inch tape drive to the second SCSI host adapter in the logic enclosure.

2.6. Accessing the Card Cage and Backplane Jumpers

Springfingers Caution

Springfingers are metal strips that are installed between the edge of the PC board and the outer panel to reduce RFI emissions. Serrated metal "fingers" protrude from either side of the strip.

If a board WITH springfingers is installed next to a board WITHOUT spring fingers, the insulator shield on the outside of the fingers MUST be present to prevent possible shorting of component leads to the spring fingers. Installation of a board WITHOUT springfingers may affect RFI emissions and may therefore affect RFI compliance. Sun Microsystems is not responsible for RFI compliance if non-springfingered boards are added to a system originally shipped WITH springfingers and RFI approval.

In the case of a logic enclosure containing boards WITH or WITHOUT springfingers use the following guidelines:

- Before removing a board WITHOUT springfingers, remove the board to the left if it is equipped WITH springfingers and an outer insulator shield.
- Always install a board WITHOUT springfingers first, and then replace the board WITH springfingers and insulator shield in the slot on the left.

If a board with springfingers is installed next to a board or filler panel also equipped with springfingers, the outside insulator shields should be removed.

Ensure that the insulator strip between the inner side of the springfingers and the PC board is intact at all times.

When removing and replacing boards with spring fingers, check the condition of the insulator strip/shield(s) and replace if damaged with P/N 560-1183.

CAUTION

Some of the devices on Sun boards are very sensitive to electrostatic discharge; they can be permanently damaged. An electrostatic charge can build up in the human body and then discharge when you touch the board. *Before handling any board*, make sure that you have placed your hand on a conductive surface that is grounded to a common earth ground, (such as the metal screws on an AC receptacle cover) to discharge the static electricity present in your body.

2.7. Installing Printed Circuit Boards

If you are installing Sun printed circuit boards, ensure that you have both the PCB and the backplane in the logic enclosure configured correctly. Refer to the *Card Cage Slot Assignment and Configuration* manual. The physical layout of the jumpers appears in Appendix A.

Connecting the Power Cord

Follow the steps listed below in order to connect the power cord correctly.

NOTE *The 16-slot logic enclosure power cord (P/N 180-1189 for domestic and 180-1190 for Europe) must be connected to a dedicated 15-amp circuit by a grounding-type cord.*

CAUTION **Do not make mechanical or electrical modifications to the cabinet. Sun Microsystems is not responsible for regulatory compliance of modified cabinets.**

1. An insulated grounding conductor that is identical in size, insulation material, and thickness to the neutral grounded and hot ungrounded branch-circuit supply conductors, (except that it is green with or without one or more yellow stripes), is to be installed as part of the circuit that supplies the unit or system.
2. The grounding conductor described in item 1 above is to be grounded to earth at the service equipment, or, if supplied by a separately derived system, at the supply transformer or motor-generator set.
3. The attachment-plug receptacles in the vicinity of the unit are all to be of a grounding type, and the grounding conductors serving these receptacles are to be connected to earth ground at the service equipment.

Power Requirements

Table 2-1 gives the maximum operating voltage and frequency ranges for the logic enclosure.

Table 2-1 *Power Requirements*

<i>Configuration</i>	<i>Nominal AC Input</i>	<i>Operating</i>	<i>Operating Frequency</i>
	<i>Voltage Range</i>	<i>Range</i>	<i>Range</i>
Domestic	200-240 VAC	180-264 VAC	47-63 Hz
European	220-240 VAC	180-264 VAC	47-63 Hz

Table 2-2 shows the current requirements at nominal line voltage for a 16-slot logic enclosure in a maximum configuration.

Table 2-2 *Current Requirements*

<i>Configuration</i>	<i>Nominal AC Input Voltage Range</i>	<i>Maximum Current Requirement</i>
Domestic	200-240 VAC	12 A
European	220-240 VAC	12 A

CAUTION Before beginning the following connections, make certain that the AC power switch on the monitor is OFF ("O" pushed in).

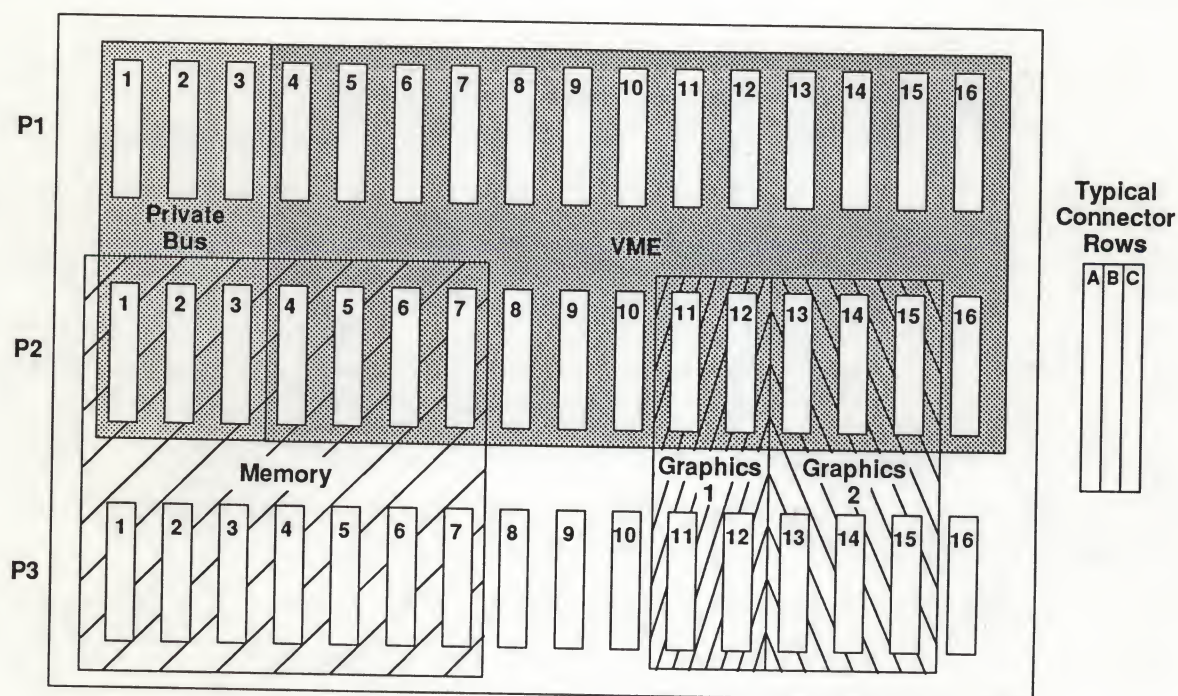
NOTE The unit is designed to conform with the West German ergonomics standard ZH1 /618. An anti-glare screen on the monitor (such as OCLI filter) is required to comply with this standard. For test processing, a positive mode display (black characters on a white background) is recommended.

Backplane Layout

A.1. Card Cage Slot Numbering

Figure A-1 illustrates how the backplane slots are numbered.

Figure A-1 16-Slot Backplane Layout



VME Bus: P1 and Row B of P2 (Slots 4-16)

Private Bus: P1 and Row B of P2 (Slots 1-3)

Memory Bus: P2 Row A and C and P3 Row B (Slots 1-7)

P2 Bus: P2 Rows A and C and P3 Row B (Slots 11, 12 and 13-15)

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A.2. Backplane Connector Functions

P2 Backplane Connector Functions

The Sun P2 bus connector functions are shown in table A-1 below. The P2 bus connects slots 11 and 12, and 13 through 15.

Table A-1 *P2 Backplane Connector Functions*

<i>Connector</i>	<i>Row</i>	<i>Pins</i>
J2/P2	A	1–32
J3/P3	B	33–64
J2/P2	C	65–96

Private Internal Bus Connector Functions

In addition to the Sun P2 bus and the VMEbus, the 16-slot backplane has a private internal bus, which connects slots 1, 2, and 3 as shown in table A-2 below.

Table A-2 *Private Internal Bus Connector Functions*

<i>Connector</i>	<i>Row</i>	<i>Pins</i>
J1/P1	A	1–32
J1/P1	B	33–64
J1/P1	C	65–96
J2/P2	B	33–64

NOTE The J1/P1 rows A, B, and C on slots 1, 2, and 3 are not connected to the VMEbus. Boards which use the VMEbus cannot be used in slots 1, 2, or 3. J2/P2 row B is connected between slots 1 through 7.

Memory Bus Backplane Connector Functions

A Memory bus connects slots 1 through 7, as shown in table A-3.

Table A-3 *Memory Bus Backplane Connector Functions*

<i>Connector</i>	<i>Row</i>	<i>Pins</i>
J2/P2	A	1–32
J3/P3	B	33–64
J2/P2	C	65–96

A.3. Backplane Jumper Functions

Each of the jumpers listed in the left-hand column of table A-4 connects BG0-3IN to BG0-3OUT and IACKIN to IACKOUT on a particular card cage slot, shown in the right-hand column of the table.

Table A-4 *Backplane Jumper Functions*

<i>Jumper</i>	<i>Slot</i>
J2XXX	2
J3XXX	3
J4XXX	4
J5XXX	5
J6XXX	6
J7XXX	7
J8XXX	8
J9XXX	9
J10XXX	10
J11XXX	11
J12XXX	12
J13XXX	13
J14XXX	14
J15XXX	15
J16XXX	16

B

Troubleshooting Faults

Check the items listed below before calling for service.

B.1. Power Check

- Check the cabinet LEDs— the power indicator should be ON. If not, continue with this subsection.
- Is the fan running? If the fan is not running, make sure the AC power cord is plugged securely into the wall outlet.
- Check that the circuit breaker on the power sequencer is functional .

B.2. Board Check

- Check the seating of the circuit boards. If a board appears to be loose, reseal it.
- Check the backplane connectors for any bent pins.
- Check the jumper settings on the backplane and accessory boards.

Revision History

<i>Dash Number</i>	<i>Revision</i>	<i>Date</i>	<i>Comments</i>
10	A	26 September 1989	First Customer Shipment

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Did this guide meet your needs? If not, please indicate what you think should be added or deleted in order to do so. Please comment on any material that you feel should be present but is not. Is there material found in other manuals that would be more convenient if it were in this manual?

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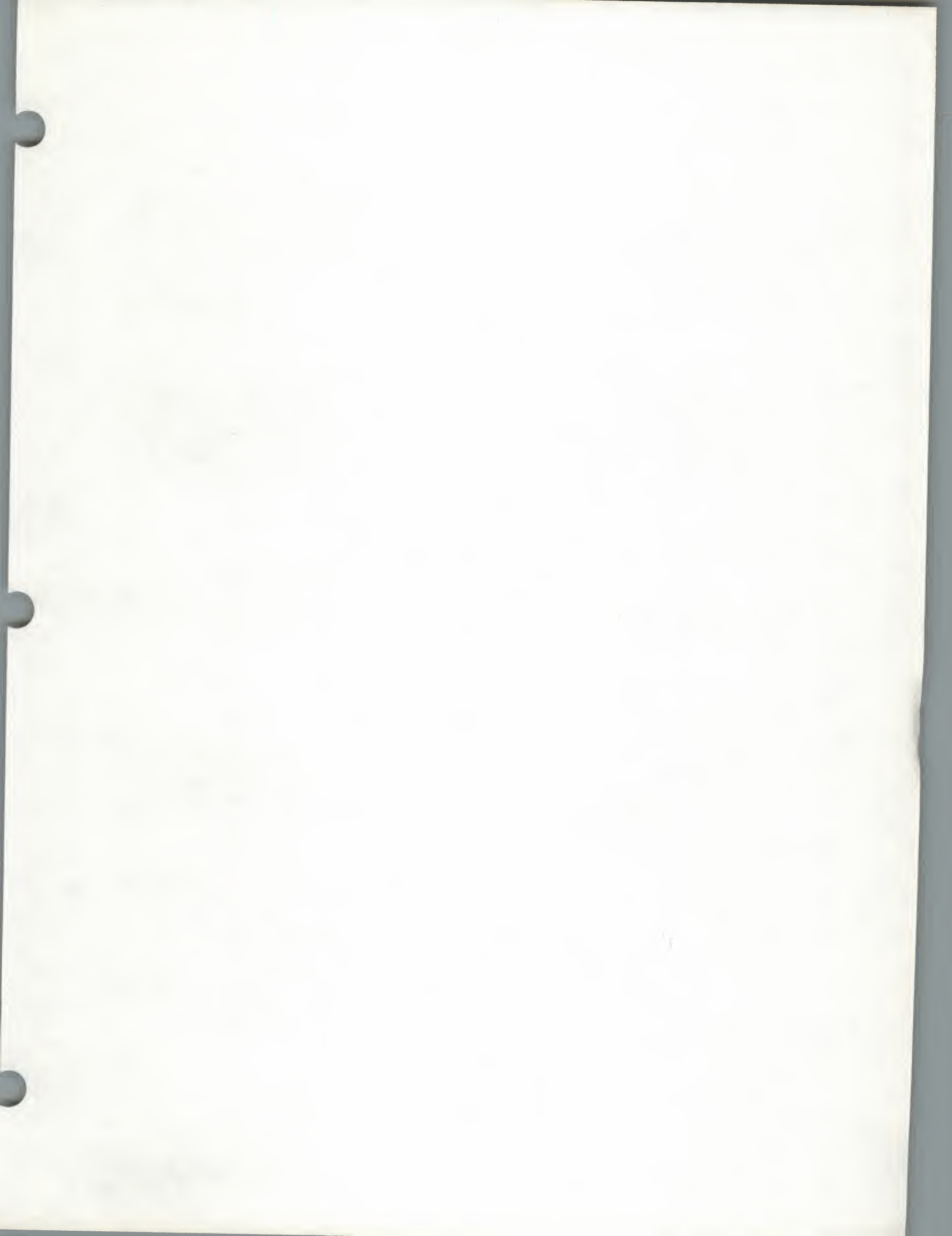
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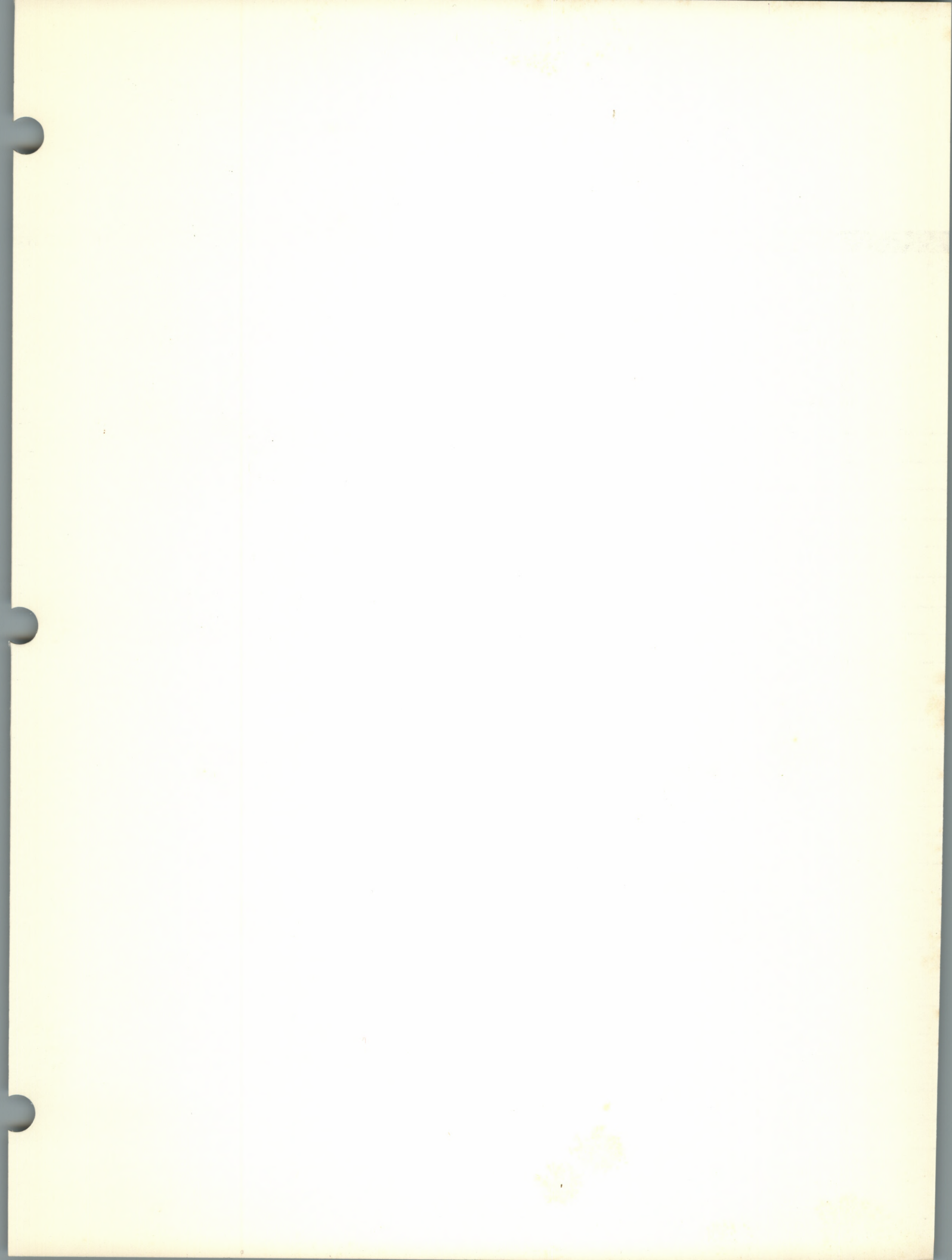
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